SECTION 404(b)(1) EVALUATION
SOUTHWEST WASHINGTON LITTORAL DRIFT RESTORATION,
REGIONAL SEDIMENT MANAGEMENT DEMONSTRATION,
DISPOSAL at BENSON BEACH

I. Introduction

Section 404 of the Clean Water Act of 1977 requires that all civil works projects involving the discharge of dredged or fill material into waters of the United States be evaluated for water quality effects prior to making the discharge. This evaluation assesses the effects of placing dredged material, consisting of fine to medium grained sand, at Benson Beach, Pacific County, Washington near the Mouth of the Columbia River (MCR). One of the two possible disposal options also proposes the excavation of a disposal sump within the MCR and subsequent placement of sandy material dredged during the routine annual navigation channel maintenance into the sump to refill the excavated area.

II. Description of the Proposed Activity

a. Proposed Action

The U.S. Army Corps of Engineers, Portland District, proposes to place sand dredged from the Federal Navigation Channel within the Mouth of the Columbia River (MCR) directly onto Benson Beach to supply sand to the littoral drift system (ocean currents running along the shoreline) which moves sand along the Long Beach peninsula. The effects of dredging the MCR and disposal at other approved sites are not addressed in this evaluation because those activities have been addressed in previous environmental documents. This evaluation describes two methods of placement that could be conducted. The determination of which of the two placement options will be used will be dependent on Congressional authorities, funding levels, and sources of funding obtained for actions.

b. Purpose and Need

Since the mid 1990's, state and local interests have expressed interest in placing sand dredged from the MCR Federal navigation channel directly onto Benson Beach to offset beach erosion and to supply sand to the littoral system of Long Beach peninsula. To address this issue, the Southwest Washington Littoral Drift Restoration (LDR) was initiated.

The LDR demonstration is funded as part of the U.S. Army Corps of Engineers' Regional Sediment Management Program. The purpose of the LDR is to develop a long-term strategy for placing dredged material in the littoral drift zone on the southwest Washington coast, just north of the Mouth of the Columbia River (MCR). This proposed activity is part of the LDR and is consistent with the objectives, and intent of the Regional Sediment Management (RSM) Program. The concept of RSM originated with the notion of coordinating coastal dredging activities for the purpose of retaining sand in the littoral zone in order to foster more balanced, natural system processes, and potentially reduce dredging costs. The proposed LDR is intended

to promote sustainability principles through an approach that considers competing demands for sediment resources, accommodates multiple objectives, and adopts a long term perspective to develop, demonstrate, and implement a dredging and placement program and achieve acceptable cost efficiencies.

Authority for the LDR development and planning process was given to the Corps by Congress as Section 516 of the Water Resources Development Act (WRDA) of 2000. This authority allows the Corps to conduct planning processes, studies, and stakeholder consultations in order to manage sediments across regional scales. The WRDA 2000 authority for RSM demonstrations does not allow actual construction of projects (including material placement) – rather, it relies on other existing authorities and Congressional authorization mechanisms to direct implementation activities. Long-term implementation of the LDR would have to come from additional authorizations granted either in a subsequent WRDA or within the Corps' appropriations.

c. Description of Activity

The demonstration activity would be conducted concurrently with the Corps' dredging and disposal operations at the MCR, which typically occurs annually between June 1st and November 1st. Both disposal options considered in this document propose placement of material on Benson Beach within the intertidal zone which would not start until after July 15th to minimize impacts to salmonids. Disposal Option 1, the direct pump ashore method would be completed before November 1st, the end of the dredging season. Disposal Option 2, which calls for the excavation of a sump in the area south of the north jetty, would require that the work take place before September 15th each year due to concerns with age 1+ Dungeness crabs migrating through the sump area after that date. In order to determine the best long term strategy, environmental clearances are being requested that would have a 5-year horizon (up to 1,000,000 cubic yards placed annually to the north of the north jetty) as well as address two options for pipeline placement of material into the littoral drift. The quantity of material to be placed within the intertidal site is currently unknown but would most likely be substantially less that the 1,000,000 cubic yards annual maximum.

Disposal Option 1 – Direct Pump Ashore

Sand would be dredged from the Federal Navigation Channel within the MCR project using a hopper dredge. The dredge would then be maneuvered near the south side of the north jetty and the sediment would be pumped north through a 16- to 30-inch pipe onto Benson Beach. The disposal pipe would extend for several thousand feet from the dredge, across the north jetty, and along the beach parallel to the shore.

Dredged material (>98% sand) from the MCR would be placed directly into the intertidal zone between +14 and -10 Mean Lower Low Water (MLLW) on Benson Beach (Figure 1). The area for placement of sand extends from approximately 1,500 ft north of the north jetty, to a point approximately 4,500 ft. north of the jetty (Figure 2). This Direct Pump Ashore option could provide up to 700,000 cubic yards of material per year before the present MCR dredging operation would be adversely impacted by increased cost and/or requiring additional dredging

equipment, or impacting the extent of maintenance dredging that can be accomplished within the allowable time.

The material would be placed along the shore in parallel "strips" measuring approximately 150 ft (x-shore) by 2,000 ft. (along-shore). The strips would be placed beginning at the southern end and moving to the north by incrementally extending the pipeline. The process would then be repeated until all the material has been placed. The pipeline route would extend along the edge of the upper beach scarp, or below the seaward edge of the vegetation in areas where there is no scarp, to the point of deposition. The pipeline may be buried in some locations to minimize risks to beach users. Up to 3-feet of elevation for the pipeline may be required, and the material used to support the elevated pipe would be obtained by re-working material from the beach area prior to the initiation of the disposal activity. Large earth-moving equipment will be used to move some of the disposal material in order to limit the vertical accumulation on the beach and achieve the desired placement template. The constructed profile will be relatively flat with a front slope on the order of 20:1 from approximately +14 to -10 ft MLLW (Figures 2-3).

After the discharge event, as the newly deposited surface substrate is dispersed by wind, waves, and currents, the disposal sand it will quickly become saturated and compacted like the substrate typically found in the Benson Beach area.

Disposal Option 2 - Sump and Pump Ashore

This option would involve the removal of sand from the seabed in an area south of the north jetty and north of the MCR navigation channel (Figure 4). The sediment would be removed by a cutterhead pipeline dredge and form a depression (sump) on the present seabed. The pipeline dredge would hydraulically discharge the dredged material (sand) through a 16- to 30-inch diameter pipeline over the top of the north jetty into the intertidal zone of Benson Beach, between MHHW and MLLW as described above. The actual volume of material to be re-handled will depend on placement authority, available funds and the actual construction costs. For the sump area, a sump zone has been defined by considering navigation and operations, aquatic species and habitats, and sump and jetty stability. The potential sump footprint measures 3,000 ft x 600 ft; the depth of the sump will be limited by the choice of dredging equipment and the desired volume of material from a given footprint, and is expected to be no more than 10-15 feet deeper than the current bottom depth of 35-40 feet. The sump would initially be cut with a vertical side slope. However, it is anticipated that the sump side slopes would adjust to a slope of 1v:5h due to slumping and infilling from the adjacent perimeter. The sump would be a continuous area (not several separate excavations) and could provide as much as 1,000,000 cubic yards of dredged material.

Refilling of the sump would be achieved by bottom dumping from hopper dredges filled with sand from dredging the navigation channel at the MCR. This refilling of the sump for that year would be performed following the complete excavation of the sump and would employ the Corps-owned dredge Essayons or a contract dredge. The two dredges would not operate concurrently in the vicinity of the sump in order to avoid possible hazards. The sump would be filled entirely no later than September 15. Volume of sand dumped into the sump would be about 2,400 to 5,000 cubic yards per dump and would occur in strips of about 500 feet (i.e. each dump would be dispersed over a distance of 400 to 500 ft); therefore, up to approximately 200

individual dumps could be required per year. The timeframe for excavating the sump and placing the material at the Benson Beach site would likely be two weeks to a month and refilling the sump would take about the same time. Timeframes could vary, however, depending on the equipment used, and weather and wave conditions encountered during operations. During periods of bad weather, the pipeline dredge may need to be withdrawn from the sump area to the more sheltered area in the northeast corner south of the north jetty or to a location east of Jetty A. The pipeline dredge could be anchored to the seabed in the sump area using a four-point anchoring system.

Placement of the material from the sump onto Benson Beach would be the same as described above for the direct pump-ashore option except that the placement would be more continuous and subsequently for a shorter duration (fewer number of calendar days) and would not require the movement of the hopper dredge(s) back and forth from the MCR channel dredging location to the disposal pipe hook-up during the beach placement of sand. Refilling of the sump would require the hopper dredge to repeatedly place dredged material back into the sump after disposal on Benson Beach has been completed.

d. Description of the Discharge Site

The beach disposal site is typical of the nearshore marine environment with a substrate composed primarily of sand containing little or no organic material. Site topography is gently to moderately sloping beach with no distinctive features other than low relief sand waves. The site is located in an area of high current, tide, and wave activity and is subjected to continual movement of sand to and from the site. The sandy substrate supports benthic organisms which are adapted to this high-energy environment. Crab and bottom fish likely feed on benthic organisms and detritus in the vicinity of the site.

The sump disposal site, located south of the north jetty within the MCR is shown in Figure 4. Considerations used in selecting the location for the sump were: navigation, sump and jetty stability, and aquatic species and habitat. The potential sump footprint measures 600 ft by 3,000 ft; the depth of the sump would be limited by the choice of dredging equipment and the desired volume of material from a given location. It is expected to be no more than 10-15 feet deeper than the current bottom depth of 35-40 feet.

III. Alternatives Considered

In addition to the two proposed options addressed in this 404(b)(1) analysis, two additional alternatives to the proposed disposal action were evaluated in the draft Environmental Assessment (EA). The alternatives considered were No Action and a Near-Shore Disposal Alternative. The draft EA is available at the following web site: https://www.nwp.usace.army.mil/op/n/projects/mcr/docs/BBeach%20Final%20EA120805.pdf

a. No Action Alternative

This Alternative would mean no change to the standard operating procedure for maintenance dredging of the MCR, i.e. the approved disposal sites would continue to be used, including

(when necessary) the Deep Water Site 6 to 8 miles offshore. The consequence is that there would be no beneficial use of any material place in the Deep Water Site, and a significant quantity of material would be placed in the disposal sites outside of the SW Washington littoral drift system.

b. Near-Shore Littoral Zone Placement Alternative

Nearshore placement would consist of deposition of dredged materials by bottom-dump hopper dredges within a nearshore deposition zone. The placement would occur within the littoral drift cell. Placement boundaries would be 9,730 ft (north side), 10,100 ft (south side), and 8,330 ft (east and west sides) between the -40 and -60 ft. contours north of North Head (Figure 5). No pumping to the intertidal zone or re-handling of material following placement would occur. This nearshore placement site was previously proposed for beneficial disposal of MCR sediments by the Portland District in 1999, but was not evaluated further due to lack of support from the State of Washington.

IV. Factual Determinations

a. Physical Substrate Determinations

The substrate on Benson Beach is composed of fine- to medium-grained sand which is subjected to continual movement by wind, wave, and current action. Bottom topography is gently to moderately sloping beach consisting of low relief sand waves. Material placed on Benson Beach is expected to rapidly dissipate within the high energy wave environment. The bottom substrate within the MCR is also fine to medium-grained sand which is subjected to continual movement by waves, ocean currents, tides, and freshwater flow. Material placed in the sump within the MCR is also expected to be affected by these forces and is expected to quickly reach a contour typical for the area.

b. Water Circulation, Fluctuation, and Salinity Determinations

Compared to ambient ocean conditions created by waves, ocean currents, tides, and freshwater flow, the disposal actions would have little or no effect on water circulation, fluctuation, or salinity.

c. Suspended Particulate/Turbidity Determination

Short-term turbidity increases are expected during disposal at the Benson Beach location. The turbidity would be created by the additional quantity of sand resuspended within the surf zone by wave action. Hopper dredge releases to refill the sump would also be expected to increase turbidity and suspended particulates in the vicinity of the disposal activity. However, due to the high sand content (>98%) of the disposal material, the dredged material is expected to settle out of the water column quickly and the turbidity plume resulting from the activity would be intermittent and temporary.

d. Contaminant Determinations

Fill would consist of recently accumulated sand of marine origin. Sediment analysis has determined that the MCR dredged material is >98% sand and therefore meets the exclusionary guidelines of the Lower Columbia River Dredged Material Evaluation Framework.

e. Aquatic Ecosystem and Organism Determinations

Impacts of fill and discharge to the structure and function of the aquatic ecosystem and organisms are expected to be minor, in that the disposal would temporarily disrupt feeding and food sources of organisms present within the site. Aquatic ecosystem functions would essentially remain unchanged within the high-energy environments of the sites. Some organisms would be buried or temporarily displaced by the fill and discharge. It is expected that organisms would rapidly reestablish at the sites within a short time following disposal.

The Sump and Pump Ashore option would cause a loss of benthic organisms and crabs by entrainment during the sump excavation. The suction action of the dredge would entrain all benthic organism and crabs found in or on the bottom surface at the point of uptake. It is not known whether the sump, after excavation and before it is refilled, will impact the crab population. Even thought the refilling will begin quickly after the excavation process, there will still be some period of time when the excavation hole will be available for crabs to migrate into. The crabs may migrate into and out of the sump in the same way that they would cross that area if the sump was not there. Or, the sump may act as an attractant for crabs that move into the area after sump excavation is complete. If the sump acts to accumulate organic matter, crabs could be attracted to that area. It is also possible that the sump would act as a sink for crabs. If the crabs crawl or fall into the sump and then are not able to climb out and continue their migratory movement, the crabs may accumulate in the sump and then be buried when the hopper disposes sand to refill the sump.

The fill action may also affect but is not likely to adversely affect listed threatened or endangered salmonids or their critical habitat. Biological Assessments documenting this conclusion were prepared and submitted to the National Marine Fisheries Service (NMFS) and U.S. Fish and Wildlife Service.

The river bottom and water column in the area of the proposed sump are designated Critical Habitat for adult and juvenile salmonids. The proposed action may affect and is likely to adversely affect critical habitat for all Columbia River salmonids considered to be threatened or endangered. These effects, however, would be temporary as the sump would be filled immediately following excavation of the sump over a time period of about two weeks with the same type of material excavated from the sump. Fill material would come from dredged material from the Columbia River during the Corps' federal navigation channel maintenance dredging operations (>98% sand) at the MCR.

Implementation of the proposed demonstration may cause adverse impacts to Essential Fish Habitat (EFH) for spiny dogfish, lingcod, cabezon, kelp greenling, Pacific hake, butter sole, curlfin sole, English sole, flathead sole, petrale sole, rex sole, rock sole, sand sole, starry flounder, black rockfish, and brown rockfish. These impacts are expected to be temporary and

habitat is expected to recover fully with filling of the sump and dispersal of material from Benson Beach. Dispersal of sand along the littoral drift is designed to mimic natural conditions of sand movement before construction of the MCR jetties, and as native fish evolved under these conditions, this activity is expected to be ecologically beneficial for fish and for coastline health in general.

f. Proposed Disposal Site Determinations

The dredged material would not violate Environmental Protection Agency or State water quality standards. Relocation of sediments would not introduce substances into surrounding waters or violate the primary drinking water standards of the Safe Drinking Water Act (42 USC 300 et seq.).

g. Determination of Cumulative effects on the Aquatic Ecosystem

For a determination of cumulative effects, the effects of the proposed activity have to be viewed in the context of past, present and reasonably foreseeable future actions that may impact environmental resources in the vicinity of the work. The cumulative effects of basin-wide actions are addressed in detail in Chapter 6 of the *Columbia River Channel Improvement Project Final Supplemental Integrated Feasibility Report and Environmental Impact Statement* (January 2003) which can be found at the following web site: https://www.nwp.usace.army.mil/issues/crcip/final.asp.

There have been significant impacts to the Lower Columbia River and MCR from historic actions such as the Federal Columbia River Power System which has greatly modified flow patterns of the Columbia River, the jetty system at the MCR which has altered ocean currents and wave patterns in the vicinity of the proposed activity, and dredging which has prevented meandering of the channel as would be expected in a more natural, dynamic river system. Because the impacts are intermittent and in a small area relative to the overall size of the MCR and SW Washington beaches, this proposed activity will have only a small temporary impact on the aquatic ecosystem in the MCR and Benson Beach area. However, the overall objective of the work is to help offset some of the negative consequences of past ecosystem modifications which have caused a decline in the amount of sand in the SW Washington littoral drift system. The net effect of the proposed activity should be to improve the aquatic ecosystem of the SW Washington coastline.

h. Determination of Secondary Effects on the Aquatic Ecosystem

Disposal within the Benson Beach site could result in minor disruption of recreational use during disposal activities.

V. Findings of Compliance

a. Other alternatives were considered including the "no action" alternative but were rejected because they did not address the need for beneficial use of dredge material which would

add sand to the Southwest Washington littoral drift system, or were not supported by the State of Washington resource agencies.

b. The proposed action is in compliance with applicable State water quality standards.

c. The proposed action would not violate the toxic effluent standards of Section 307 of the Clean Water Act. State water quality certification has been requested.

d. The specific fill action may affect but is not likely to adversely affect listed threatened or endangered salmonids or their critical habitat. Biological Assessments documenting this conclusion were prepared and submitted to the National Marine Fisheries Service (NMFS) and U.S. Fish and Wildlife Service.

e. The proposed fill would not result in significant adverse effects on human health and welfare, including municipal and private water supplies, recreational and commercial fishing, plankton, fish, shellfish, and wildlife. Significant adverse effects on aquatic ecosystem diversity, productivity, and stability, and recreational, esthetic, and economic values would not occur.

f. Appropriate steps to minimize potential adverse impacts will be specified in the Environmental Protection standards prepared for the work.

With the inclusion of appropriate and practical conditions to minimize adverse effects to the aquatic ecosystem, the proposed action is specified as complying with the requirements of the Section 404(b)(1) guidelines.

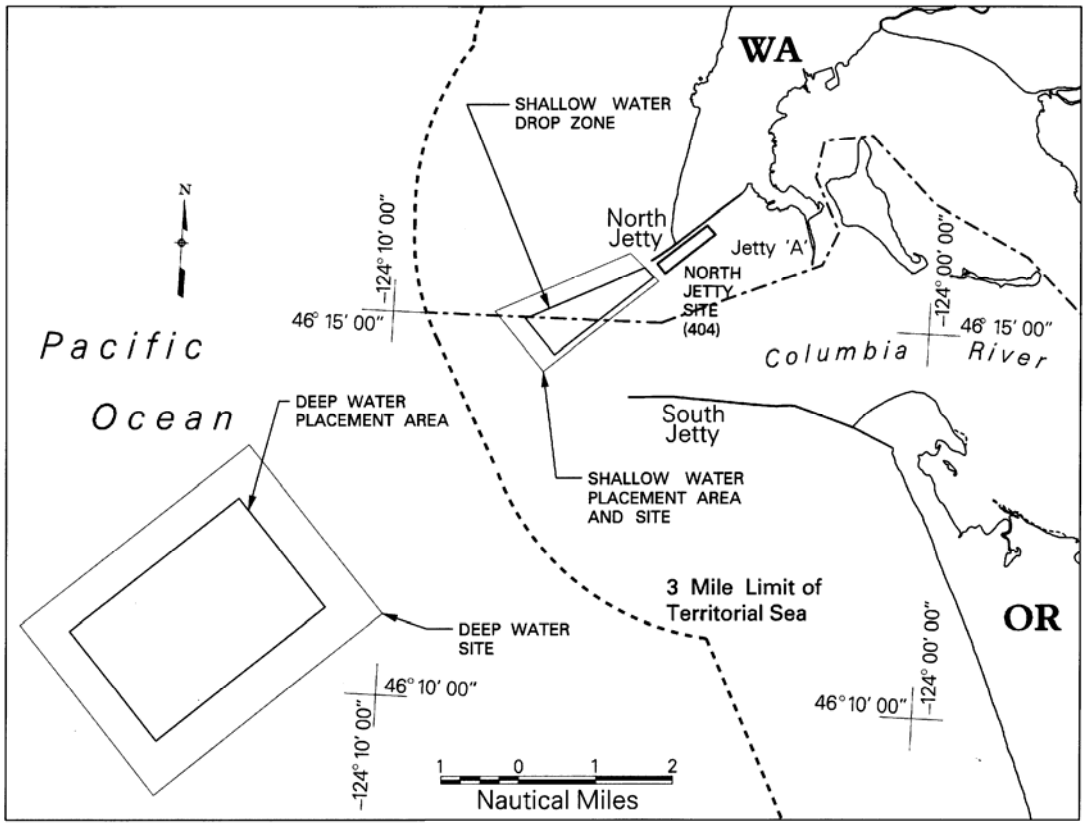

Figure 1. Vicinity map.

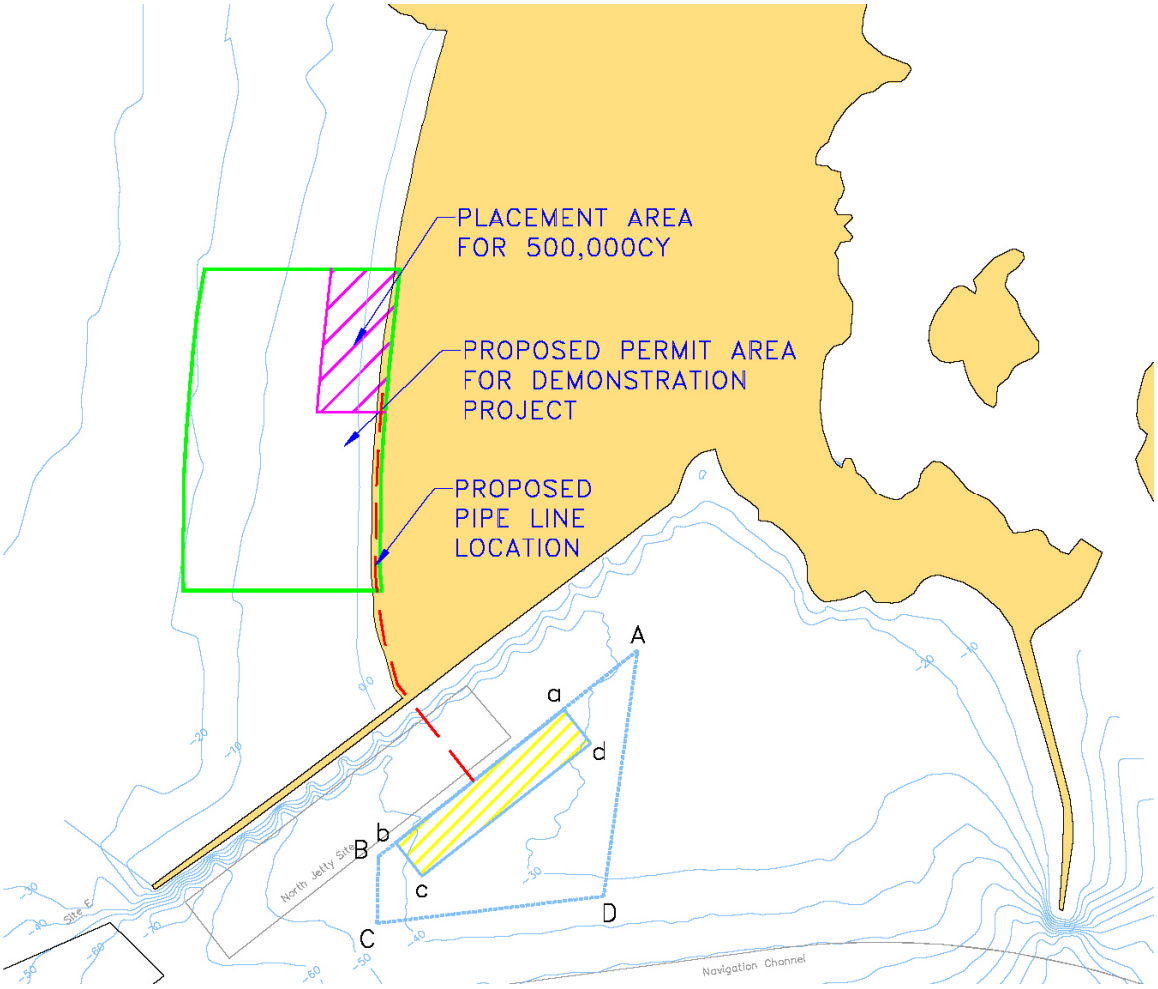

Figure 2. Plan view – Benson Beach placement area.

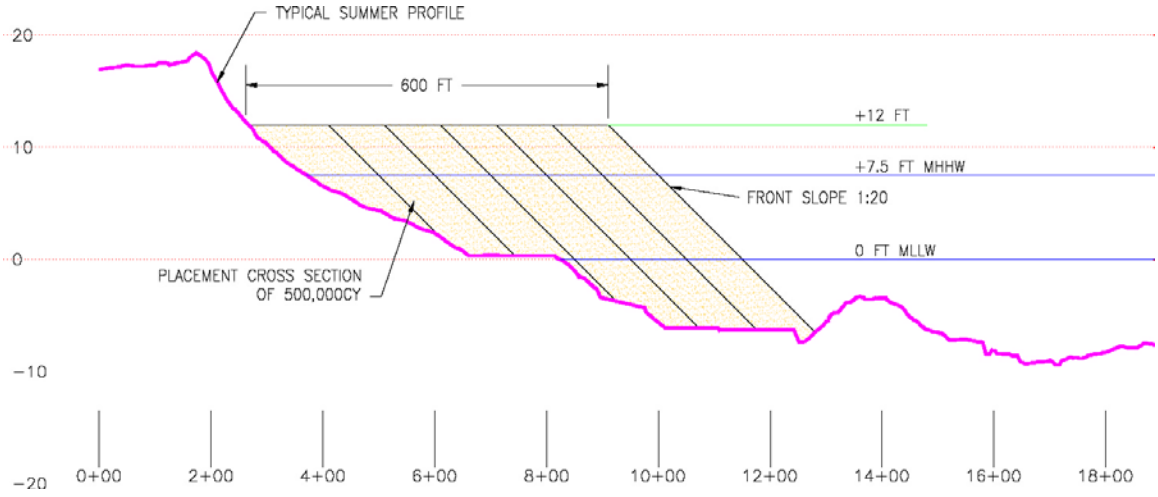

Figure 3. Typical section – Benson Beach placement area

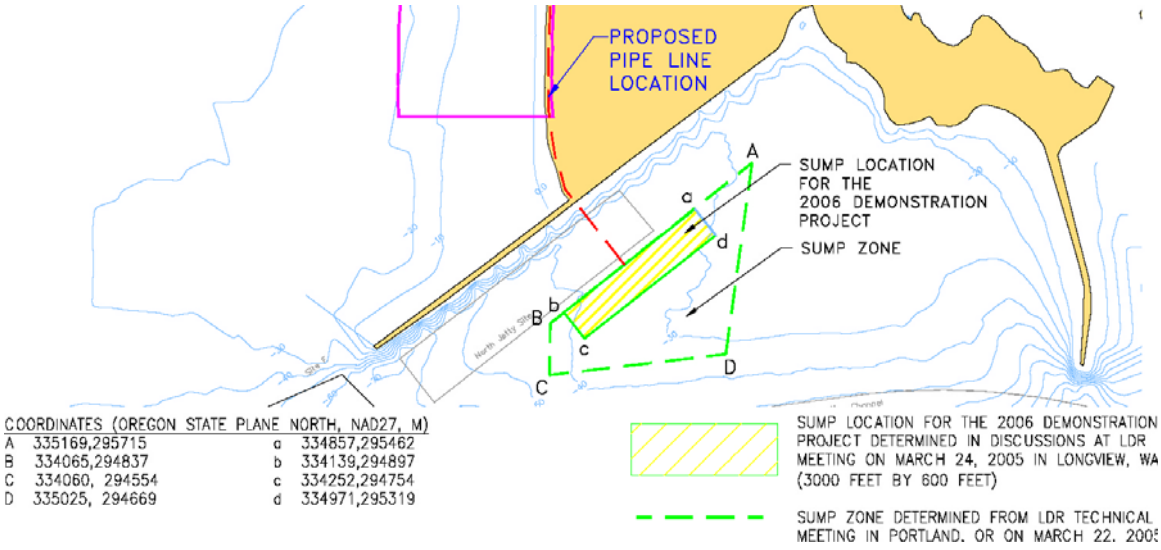

Figure 4. Sump zone and potential sump location.

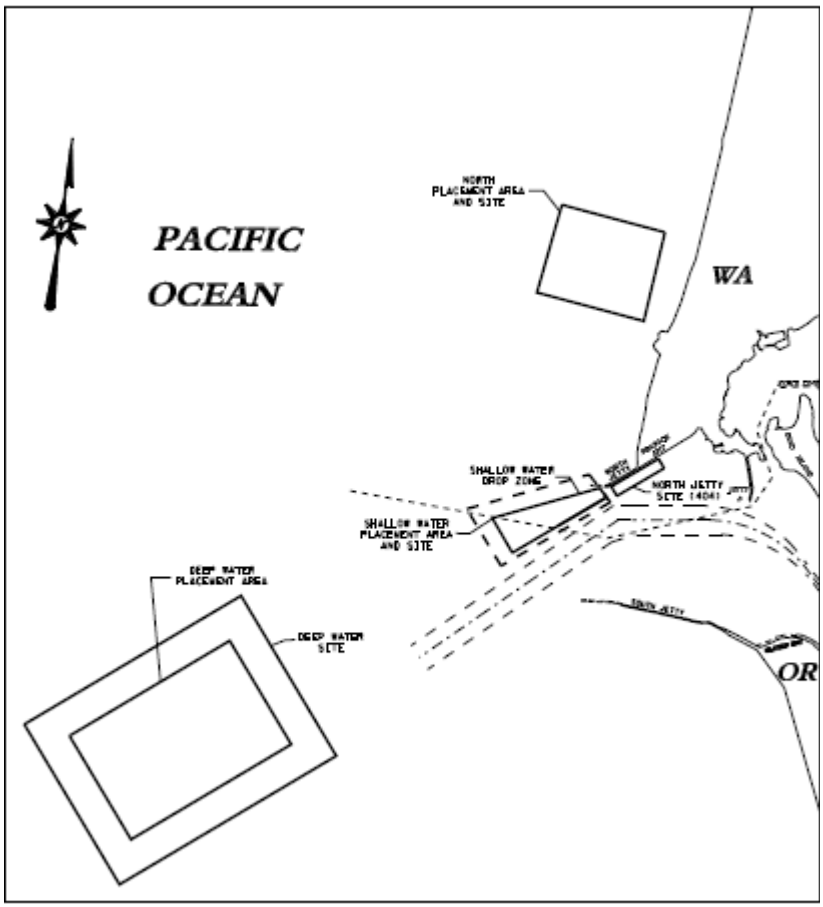

Figure 5. Nearshore Placement Zone.